Idaho Department of Health and Welfare

Idaho Disease
# Bulletin

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## Hantavirus in Idaho

Idaho rang out 1998 with the reporting of its latest case of hantavirus infection. This marks Idaho's twelfth case since 1978. The non-fatal case, reported from South Central Idaho, suffered severe respiratory involvement but has been discharged from the hospital and continues to slowly recover.

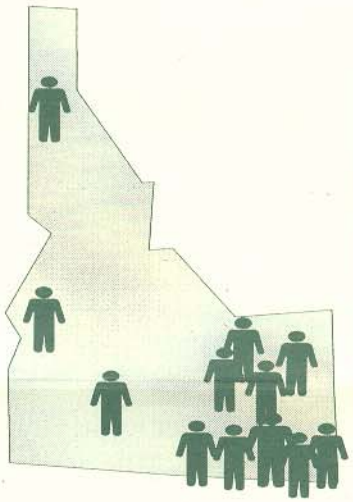
A thorough environmental assessment of the patient's home was conducted by the district health department. This investigation revealed large numbers of peridomestic deer mice (*Peromyscus maniculatus)*, a known reservoir of hantavirus. Recommendations based on the investigation were made to rodent proof the residence in order to reduce the risk of future infections. No other household members were ill.

Hantavirus was first recognized as a pathogen in 1993 following an investigation of unexplained acute respiratory distress syndrome (ARDS) cases in the Four Corners area of the United States (CO, NM, AZ, UT). Retrospective laboratory analysis of samples from unexplained illnesses prior to 1993 identified additional case. The first known U.S. case occurred in Utah in 1959, Idaho's first known case occurred in 1978.

**Known risk factors associated with infection**

- Inhalation of mist or dust from rodent excretions
- Direct contact with mucous membranes after handling excretions (touching mouth or nose after cleaning up nests, feces, etc.)
- Rodent bite

The Idaho Department of Health and Welfare and the Centers for Disease Control and Prevention both maintain hantavirus data registries. When possible, human samples are also forwarded to CDC for confirmation and archiving.



=one case

The geographic distribution of Idaho cases is shown here. Only two cases had a known travel history to the Four Corners area. All other infections are believed to have been acquired within Idaho. Most infections were recorded in the southeastern region of the state.

| National Data (12/98) | Idaho Data (1/99) |
|---|---|
| 205 confirmed cases | 12 confirmed cases |
| 87 fatalities (42%) | 4 fatalities (33.3%) |
| 124 males (61%) | 9 males (75% ) |
| White: 155 (76%) | White: 11 (91.7%) |
| Am Indian: 44 (22%) | Am Indian: 1 (8.3%) |
| Black: 5 (2%) | Black: 0 |
| Asian: 1(0.5%) | Asian: 0 |
| Hispanic: 22 (11%) | Hispanic: 2 (16.6%) |

Contact Dr. Leslie Tengelsen, Assistant State Epidemiologist, Idaho Department of Health and Welfare, 208-334-5939, or Joni Young, Special Pathogens Branch, CDC, Atlanta, GA, 404-639-1511, for more information.

**INSIDE:**

# Botulism

Two recent non-fatal cases of infant botulism were reported to the State Health Department from the North Central District Health Department. The first case (1997) was linked to the use of Karo Syrup on the pacifier. Due to the ubiquitous nature of *Clostridium botulinum* spores, the source of infection for the second case (1998) was never determined, despite a thorough investigation. Both infants initially presented with constipation but ultimately required extended ventilation.

The name 'botulism' originated from the Latin word for sausage, *botulus*, which was often the implicated food item in outbreaks early in the nineteenth century. Today scientists have implicated many sources, including carrots, honey, baked potatoes, and asparagus.

Botulism poisoning is caused by a neurotoxin produced by *C. botulinum*, a gram positive, anaerobic spore-former. The toxin prevents the release of acetylcholine at the receptor, therefore, inhibiting nerve signal transmission. Because of this blockage, flaccid paralysis is a common finding.

Three clinical forms of botulism have been described based on the site of toxin formation.

- **Foodborne Botulism**

Classic foodborne botulism occurs after ingestion of preformed toxin found in foods improperly canned, stored, or reheated. Approximately 10 cases are reported each year in the U.S.

- **Infant Botulism**

First recognized in 1976, infant botulism requires colonization of the gastrointestinal tract and is the result of subsequent toxin liberation by the established microorganisms. Only 3% of hospitalized cases die. Some cases of sudden infant death syndrome (SIDS) may actually be due to infant botulism. True nationwide incidence is unknown. Honey is often implicated.

- **Wound Botulism**

Wound botulism results from a local wound infection and subsequent toxin production in situ. Most cases in the 1990's have been strongly linked to the injection of Mexican black tar heroin.

Cases of wound or infant botulism are not considered infectious. Thorough hand washing, however, is recommended following diaper changing due to toxin excretion.

**Botulism in Idaho:**

Between 1980 and 1998 Idaho reported eight confirmed cases of foodborne botulism and 17 cases of infant botulism.

Idaho residents have contracted foodborne botulism from such varied foods as improperly canned asparagus (1995), contaminated beet greens (1995), home canned carrots (1996), and home canned fish (1981).

Recently, in a Texas restaurant, foil-covered improperly stored baked potatoes gained national attention as a source of botulism intoxication.

**Testing:**

The Idaho Department of Health and Welfare, Bureau of Laboratories collaborates with the Washington State Public Health Laboratory in Seattle, WA, to carry out botulinum toxin testing. For foodborne botulism, a toxin neutralization bioassay requiring mice is utilized to identify the toxin in serum, stool, or suspected food.

With infant and wound botulism, identification of the toxin **or** isolation of *C. Botulinum* from stool or swabbed sites is diagnostic.

**Case Management:**

Botulinum antitoxin is available 24 hours a day following a discussion about the case with the State Health Department.

Call the State Health Department immediately to discuss any suspect case of botulism.

**Days: 208-334-5939**

**Nights/Weekends**
**1-800-632-8000**

If it is determined that a case has occurred, the State Health Departmen will immediately facilitate antitoxin acquisition by notifying the Enteric Diseases Branch of the Centers for Disease Control and Prevention to release the antitoxin from a regional quarantine station and oversee the air-shipment of the reagent to the appropriate medical facility. The State Health Department will also initiate an investigation to identify any other persons at risk from the suspect food.

# "Actual" Causes of Death in Idaho

The 10 leading causes of death in Idaho in 1997 were: diseases of the heart, malignant neoplasms, cerebrovascular diseases, accidents, chronic obstructive pulmonary diseases (COPD), pneumonia and influenza, diabetes mellitus, suicide, Alzheimer's disease, and chronic liver disease and cirrhosis. A comparison to the 10 leading causes of death in the United States is shown in Table 1 (page 4). These causes of death often have multiple underlying behavioral risk factors, and some diseases share these underlying risk factors. The contribution of these known risk factors is not evident from these death statistics. However, many years of research have successfully elucidated the attributable risk of many of these underlying risk factors to these causes of death, so it is possible to estimate their contribution. This, in essence, shows the "actual" leading causes of death, providing a better focus for public health disease strategies.

**Methods**

In order to evaluate the contribution of various external, non-genetic risk factors involved in the most common causes of death among Idaho residents, the Center for Vital Statistics and Health Policy applied the methodology of an article published by McGinnis and Foege (1993). In this article, the authors selected nine of the most prominent non-genetic risk factors contributing to death. These included tobacco, diet and activity patterns, alcohol, microbial agents, toxic agents, firearms, sexual behavior, motor vehicles, and illicit drug use. Using previously published attributable risks for the major causes of death, McGinnis and Foege associated these underlying causes with the major causes of death. Additional methodologies established by the Centers for Disease Control and Prevention (CDC) were used to specifically estimate the impact of cigarette smoking (Office on Smoking and Health, 1996) and alcohol use (CDC, 1990). Conservative estimates were made for all categories in order to reduce the likelihood of overestimating the impact of any single category.

**Results**

In 1997, 8,952 Idaho residents died. The numbers of deaths due to underlying non-genetic risk factors are shown in Figure 1. Tobacco use was the leading "actual" cause of death (1,645 deaths), followed by diet and exercise patterns (1,193 deaths). Alcohol, with an estimated 509 deaths, was the third highest "actual" cause of death. Microbial agents, which include pneumonia, were responsible for an estimated 347 deaths and were the fourth leading "actual" cause of death. The remaining "actual" causes of death include toxic agents, firearms, motor vehicles, sexual behavior, and illicit drug use.

**Conclusion**

Idaho cause-specific death rates have historically been lower than corresponding U.S. rates for the ten leading causes of death in the U.S. This was the case in 1997, with the exceptions of chronic obstructive pulmonary diseases, accidents, and suicide. The rates of these underlying causes of death are affected in part by the underlying behavioral risk factors associated with these causes of death and may be reduced by focusing efforts on reducing the "actual" causes of death discussed above. In other words, by decreasing the "actual" number of deaths attributed to tobacco use, the underlying deaths caused by heart disease and malignant neoplasms will be reduced. Similarly, decreasing the "actual" number of deaths due to alcohol use will decrease underlying deaths caused by chronic liver disease and cirrhosis, accidents, and suicides. Understanding the contribution of these risk factors provides perspective and illuminates the typical presentation of causes of death statistics.

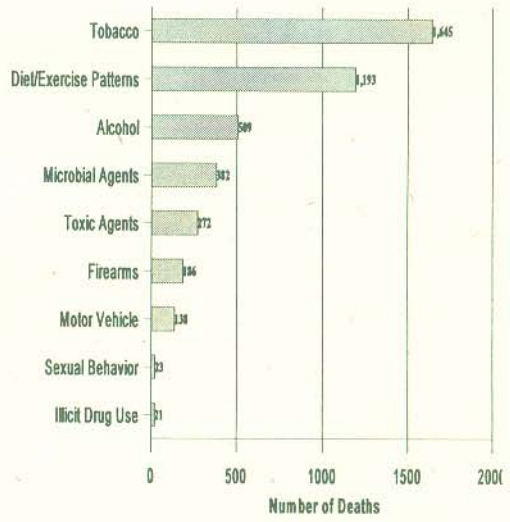



**Figure 1:** Contribution of underlying non-genetic risk factors to the 10 leading causes of death in Idaho during 1997.

*Statistics for this report were provided by the Idaho Center for Vital Statistics and Health Policy (1998).*

*For additional information contact: Joe Pollard, Idaho Center for Vital Statistics and Health Policy , 208-332-7302.*

Table 1: Comparisons of the top 10 underlying causes of death-- Idaho and the U.S., 1997.

| Causes Ranked 1-10 in U.S. based on the number of deaths (U.S.) | Preliminary U.S. Rate | Idaho Rate |
|---|---|---|
| 1. Diseases of the heart | 129.9 | 104.9 |
| 2. Malignant neoplasms | 125.0 | 108.8 |
| 3. Cerebrovascular diseases | 25.9 | 25.6 |
| 4. Chronic obstructive pulmonary diseases (COPD) | 21.4 | 24.5 |
| 5. Accidents and adverse effects | 28.9 | 39.4 |
| 6. Pneumonia and influenza | 13.2 | 11.1 |
| 7. Diabetes mellitus | 13.4 | 12.4 |
| 8. Suicide | 10.3 | 16.8 |
| 9. Nephritis, nephrotic syndrome, and nephrosis | 4.5 | 1.8 |
| 10. Chronic liver disease and cirrhosis | 7.2 | 6.5 |

*These rates (per 100,000) were age-adjusted to account for any differences which may exist in age composition between Idaho and the U.S. population.

***Idaho Disease Bulletin***

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